

Trig equations Examples:

MEMO

$$\textcircled{1} \quad -3 \cos(2x+10^\circ) = 1$$
$$\cos(2x+10^\circ) = \frac{-1}{3} \checkmark$$

$$\text{Ref } L: 70,53^\circ$$

$$2x+10^\circ = 180^\circ - 70,53^\circ + k \cdot 360^\circ \checkmark$$

$$2x = 99,47^\circ + k \cdot 360^\circ$$

$$x = 49,74^\circ + k \cdot 180^\circ \checkmark$$

$$k \in \mathbb{Z} \checkmark$$

$$2x+10 = 180^\circ + 70,53^\circ + k \cdot 360^\circ \checkmark$$

$$2x = 250,53^\circ + k \cdot 360^\circ$$

$$x = 125,27^\circ + k \cdot 180^\circ \checkmark$$

$$\textcircled{2} \quad \frac{\cos 3x}{\cos 3x} = \frac{\sin 3x}{\cos 3x} \checkmark$$

$$1 = \tan 3x \checkmark$$

$$k \in \mathbb{Z} \checkmark$$

$$\text{Ref } L: 45^\circ$$

$$3x = 45^\circ + k \cdot 180^\circ \checkmark$$

$$x = 15^\circ + k \cdot 60^\circ \checkmark$$

$$\therefore x \in \{15^\circ; 75^\circ; 135^\circ; -45^\circ; -105^\circ; -165^\circ\} \checkmark$$

$$\textcircled{3} \quad \sin(2x+30^\circ) = -\sin(90^\circ - (4x-10^\circ)) \quad \checkmark$$

$$\sin(2x+30^\circ) = -\sin(100^\circ - 4x) \quad \checkmark$$

$$2x+30^\circ = 180^\circ + (100^\circ - 4x) + K \cdot 360^\circ \quad \checkmark$$

$$6x = 250^\circ + K \cdot 360^\circ$$

$$x = 41,67^\circ + K \cdot 60^\circ \quad \checkmark$$

$$K \in \mathbb{Z} \quad \checkmark$$

$$2x+30^\circ = 360^\circ - (100^\circ - 4x) + K \cdot 360^\circ \quad \checkmark$$

$$-2x = 230^\circ + K \cdot 360^\circ$$

$$x = -115^\circ + K \cdot 180^\circ \quad \checkmark$$